with temperature release differentials up to 15°F and with river temperature reaching 68°F.

This spring Hanson Environmental conducted kodiak trawls at Jersey Point to increase the number of tag recoveries. Of fish released in the southern delta, about 1,700 fish were recovered at Jersey Point vs. 863 at Chipps Island during the same period. The proportion of individual release groups recovered will not be known until tag processing is completed late this summer.

Groups of coded-wire-tagged juvenile salmon from Feather River Hatchery were released at Sacramento on April 15, May 1, and May 15, to index survival through the Sacramento River side of the delta. The Delta Cross Channel was closed after the first two groups were released but open for much of the time after the third release. Preliminary results show survival was much better for the first two release groups, but higher water temperature in mid-May may have contributed to the difference in survival. Survival indices will not be calculated until processing of Chipps Island tags is complete.

A fraction of the Coleman National Fish Hatchery fall-run production was tagged this year to allow us to track the Coleman fish through the delta and estimate their survival to Chipps Island via the Real-Time Monitoring program and trawling at Chipps Island. The original plan was to release the production in three equal parts, about 2 weeks apart, but an outbreak of IHN forced us to release most of the tagged fish early.

The Delta Subgroup of the Central Valley Salmon project work team has a draft work plan for 1997-98 monitoring and special studies. Recommendations include expanding trawling at Mossdale, Sacramento, and Chipps Island to year round (at least 2-3 days/week) using otoliths to determine when smolts enter the delta and how long they stay there, and rotary screw trap monitoring in the Sutter Bypass in conjunction with that at Knights Landing.

As in 1996, a group has been convened to address concerns about the adverse effects of proposed fall "make-up" pumping on emigrating juvenile spring chinook salmon. Based on the lack of fish seen to date in monitoring on Deer and Mill creeks, it is expected that juvenile spring-run abundance will be very low this year. This raises the concern that sample sizes in the monitoring fish leaving the tributaries will be too low to provide an effective trigger for Delta Cross Channel closures. Alternatives are being discussed.

Based on counts at Red Bluff Diversion Dam, the preliminary estimate of 1997 adult winter-run escapement is 450-780, which is higher than expected based on the low escapement (189) 3 years ago.

Category III Studies

Ted Sommer

Early this year a project work team was formed to examine fisheries, food chain, and contaminant issues in Yolo Bypass with funding from Category III and the Interagency Program. The team, chaired by Ted Sommer (DWR), includes staff from DFG, DWR, San Francisco State University, USFWS, USGS, and Jones and Stokes Associates. This year we focused on familiarizing ourselves with the system, testing field methods, and refining the study plan.

One of the primary tasks was to describe changes in aquatic habitat of the bypass during the year. USGS collected preliminary water samples from the Yolo Causeway and Sacramento River during high winter flows, which staff are analyzing for sediments and pesticides. Based on field visits, we prepared a 1996 "time line" describing major events and physical features during and after flooding. We took a set of aerial photographs to document ponding. The prints were scanned into electronic format, then geo-referenced to satellite imagery. Pond areas, locations, and land use types are being calculated. For comparison, we are also analyzing NASA satellite imagery of Yolo Bypass ponding in spring 1986.

Delays in obtaining endangered species take permits from NMFS and DFG were a mixed blessing. On the one hand, we were not able to sample fish during peak winter flows; on the other hand, we had more time to plan our sampling and obtain the necessary gear. Beginning in late February we were able to collect useful information from seasonal ponds after the flood water had receded.

Beach seining was the primary method tested in 1997, although it appears that a variety of net sizes and sampling approaches will be needed because of habitat variability. Beginning in early March, we conducted several net efficiency trials using marked juvenile hatchery salmon. The most successful method was deployment of "block net" followed by depletion sampling. A three-sided (50 foot x 30 foot) net is set to isolate part of a pond, then repeated hauls are performed within the area using a 50-foot beach seine. Regression analysis is used to fit a line to the successive hauls and calculate total abundance.

Although the primary objective of 1997 beach seine sampling was to test methods, we believe we collected some valuable data on salmon stranding and survival. We noted much lower salmon density than was apparent in Jones and Stokes and USFWS collections in 1996. The salmon we observed were primarily fall-run size, with modest numbers of winter-run and spring-run size, and coded-wire-tagged salmon. Salmon were observed in good condition through early May, when high water temperature caused mortality in the remaining ponds. We also caught an impressive variety of native (9) and non-native (16) species over the course of the winter and spring.

Sport Fish

Raymond Schaffter

Between May 5 and May 29, in an attempt to capture young-of-the-year sturgeon, we fished 198 overnight sets of baited minnow traps in the Sacramento River between Moulton Weir and Paintersville. Sampling emphasized locations upstream of the Interstate 80 (Elkhorn) bridge. Catches included prickly sculpin, tule perch, channel catfish, bluegill, and crayfish, but no young-of-the-year sturgeon. Concurrent interviews with commercial and sport crayfishers yielded one report of a young-of-the-year sturgeon (about 3 inches long) captured in a crayfish trap near Meridian several years ago. Our failure to capture young-of-the-year sturgeon may be due to gear inefficiency or unsuitability rather than an absence of sturgeon.

We were unable to sample with towed bottom-trawling gear during the spring because all program vessels small enough to trailer upriver but large enough to mount a powered winch were in use. We have scheduled sampling in the Sacramento River between Colusa and Ryde with otter and shrimp trawls during July, when a suitable vessel will be available.

Splittail

Ken Miller

We monitor resident fishes biennially during February, April, June, and August. This program began in 1995 and is patterned after a program conducted in 1980-1983. April 1997 electrofishing at 20 fixed 1-kilometer sites throughout the delta was completed as scheduled. A total of 31 species and 3,727 fishes was caught, of which 77% were introduced centrarchids — mostly bluegill, redear sunfish, and largemouth bass. Eleven species of native fishes made up 6.3% of the catch.

The June survey had sampled 17 of the 20 sites by June 25, when this report was prepared. Our sampling suggests that young-of-the-year splittail recruitment is lower this year than in 1995, which is the last time we sampled. We have captured only 19 splittail, all from three sites in the Sacramento River and Steamboat Slough. During June 1995, we captured 219 splittail from fourteen sites throughout the delta. The low numbers and absence of young-of-the-year splittail from the southern and eastern delta suggest reduced spawning success this year, especially in the San Joaquin and Mokelumne rivers.

Contra Costa Canal Intake Entrainment

Jerry Morinaka

We have developed a study plan to provide baseline biological data prior to screening of the Rock Slough intake in July 1999. The biological monitoring data will be used to evaluate performance of the fish screens. Monitoring of predators abundant near the intake is scheduled to begin in July, and fish entrainment sampling at the intake will begin as soon as we obtain the necessary sampling equipment.

No fishery monitoring has been conducted since early March, when Contra Costa Water District discontinued use of the Mallard Slough Pumping Plant due to water quality. Monitoring will resume when the pumping plant is operational again — likely not until the end of the year or early 1998.

Los Vaqueros Fish Screen Facility Monitoring

Jerry Morinaka

The Los Vaqueros fish screen facility, on Old River, is nearing completion. Pump testing began in June and the fish screen system will be tested in early July. Following successful completion of the testing, Contra Costa Water District plans to start operating the intake. Fishery monitoring will begin then to evaluate screen efficiency.

Bay/Delta E-Mail Reflector

The Interagency Program will soon embark on a 1-year evaluation of an electronic mail reflector dedicated to the exchange of bay/delta technical and other information. The list will be unmoderated.

Interagency Program staff will be subscribed automatically. Others interested in technical issues regarding the estuary are also welcome. To subscribe, contact Karl Jacobs (kjacobs@water.ca.gov) and ask to be placed on the list: baydelta@water. ca.gov.

We expect all participants to observe list protocol: identify yourself, no flaming, don't use the list for personal or commercial messages, *etc.* Anyone who does not follow the protocol may be deleted from the list at the discretion of the list manager.

The Interagency Coordinators will review use of the list periodically to determine if it should be continued.